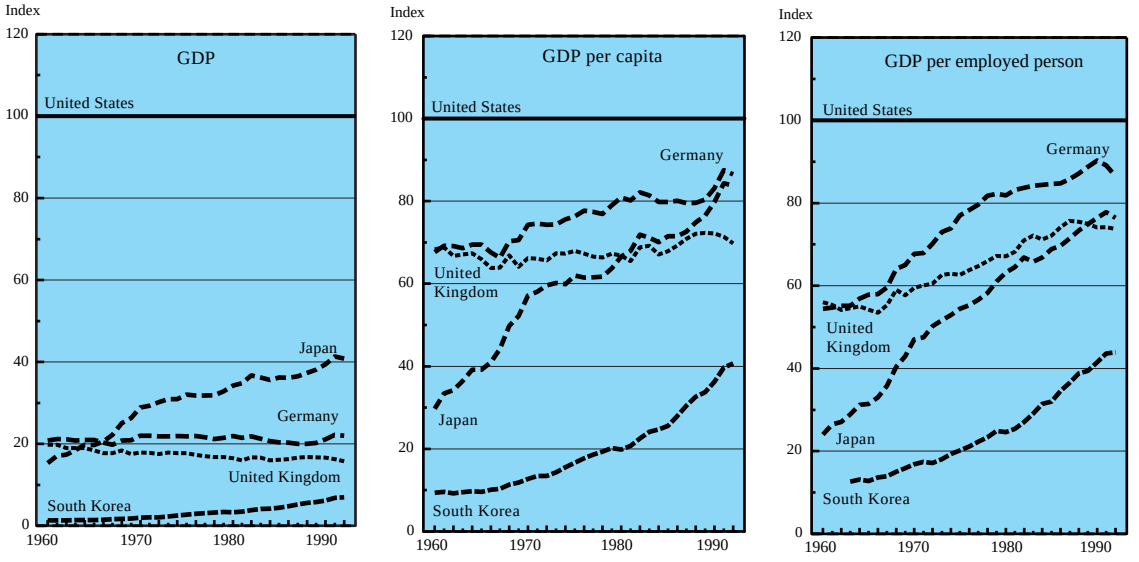
Figure 31. Comparisons of economic growth



NOTES: Index: United States = 100. Country GDPs were calculated using 1985 purchasing power parities. German data are for the former West Germany only.
SOURCE: Bureau of Labor Statistics, unpublished tabulations.

Figure 32. National expenditures on R&D, by selected countries

(Billions of constant 1987 dollars)

Year	United States	Japan [1]	Germany [2]	France	United Kingdom
1975	71.6	19.9	16.7	11.3	12.2
1976	74.6	20.6	17.0	11.5	NA
1977	76.5	21.3	17.4	11.8	NA
1978	79.8	22.3	18.7	12.1	13.5
1979	83.8	24.6	20.5	12.9	NA
1980	87.3	26.9	21.4	13.3	NA
1981	91.4	28.7	20.3	14.1	14.7
1982	95.5	30.9	20.8	15.1	NA
1983	102.3	33.5	21.2	15.5	14.4
1984	111.2	35.9	21.6	16.4	NA
1985	120.6	40.0	23.7	17.0	15.6
1986	123.3	40.6	24.4	17.2	18.1
1987	125.4	43.4	26.0	17.9	16.8
1988	128.0	46.9	26.9	18.7	17.3
1989	130.0	51.3	27.9	19.8	17.6
1990	134.1	55.5	28.2	21.0	18.0
1991	136.4	57.2	30.2	21.2	16.5
1992	136.3	58.0	31.0	21.9	17.6
1993	134.4	56.3	30.2	21.0	17.4
1994	134.3	NA	NA	NA	NA
1995	132.1	NA	NA	NA	NA

[1] Japanese data for 1970-74 are NSF estimates. The Japanese data have been revised from estimates previously published in NSF reports.

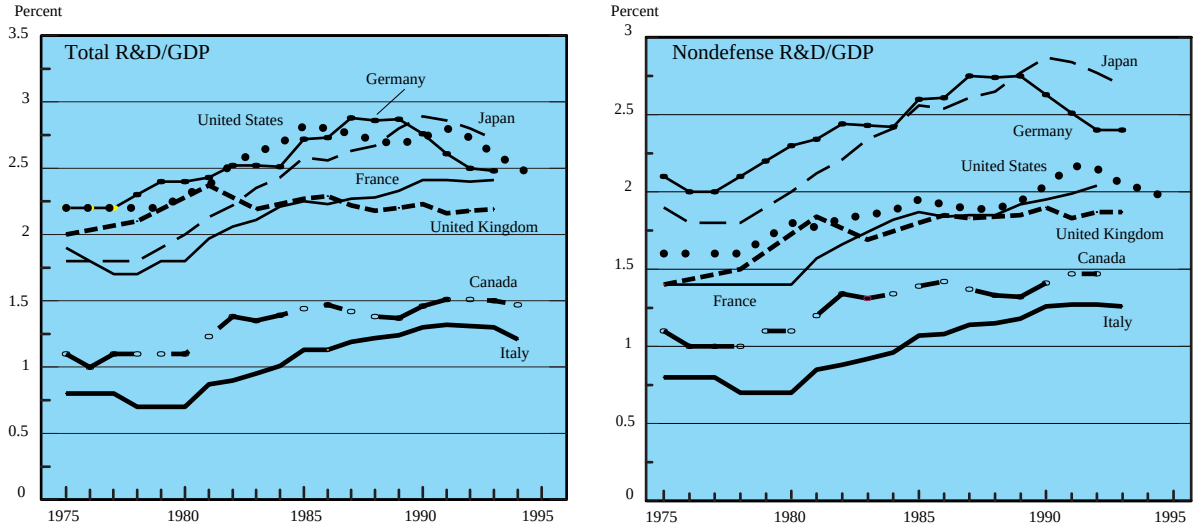
[2] Data after 1990 are for Unified Germany.

NOTES: Conversions of foreign currencies to U.S. dollars are calculated with Organisation for Economic Co-operation and Development purchasing power parity exchange rates. Constant 1987 dollars are based on U.S. Department of Commerce GDP implicit price deflators.

KEY: NA = Not available.

SOURCES: National Science Foundation, Division of Science Resources Studies; Organisation for Economic Co-operation and Development; and national sources.

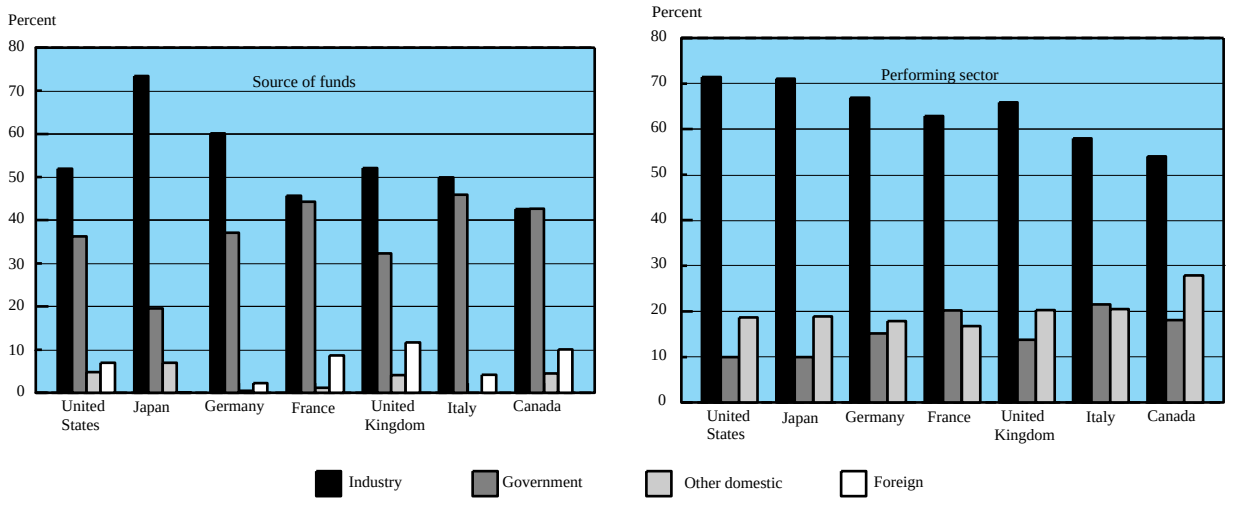
Figure 33. R&D as a percentage of GDP, by country



NOTES: After 1990, data are for Unified Germany. Japanese data for 1970-74 and 1992 are NSF estimates; the Japanese data have been revised from previously published NSF reports.

SOURCES: National Science Foundation, Division of Science Resources Studies, National Patterns of R&D Resources: 1994, NSF 95-304 (Arlington, VA: NSF, 1995); unpublished tabulations; and Organisation for Economic Co-operation and Development, Main Science and Technology Indicators database.

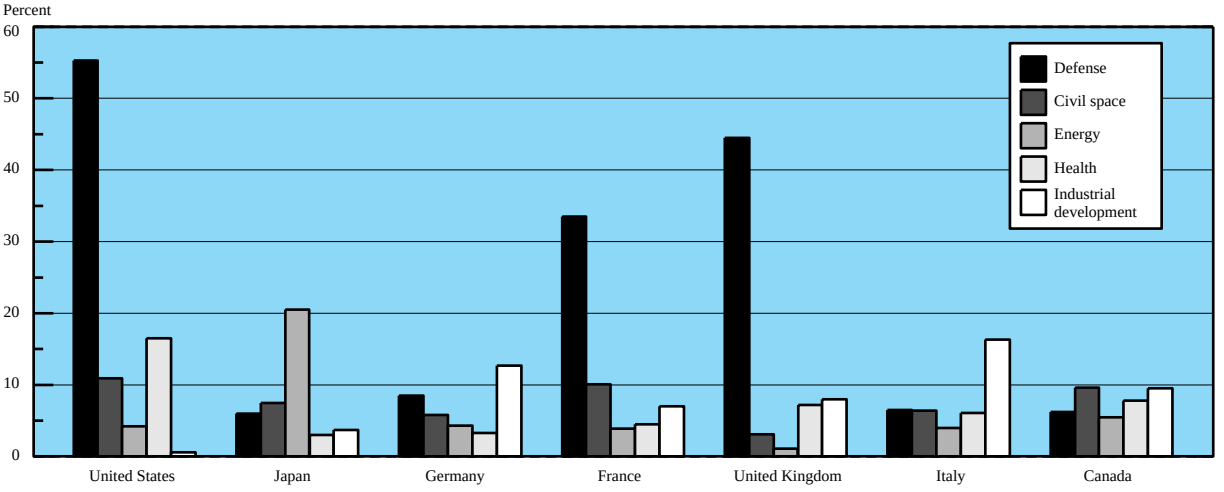
Figure 34. R&D expenditures, by country, source, and performer: 1993



NOTE: Foreign performers are included in the "industry" and "other domestic" sectors.

SOURCES: National Science Foundation, Division of Science Resources Studies, National Patterns of R&D Resources: 1994, NSF 95-304 (Arlington, VA: NSF, 1995); and Organisation for Economic Co-operation and Development, unpublished tabulations.

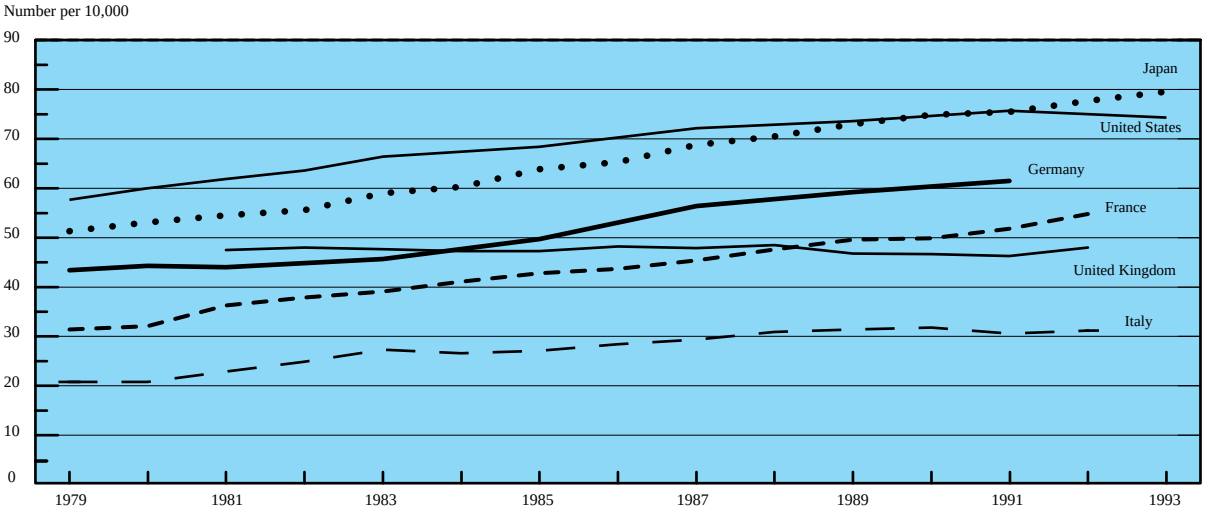
Figure 35. Government R&D support, by country and socioeconomic objective: early 1990s



NOTES: Details do not add to 100% because funding for some objectives (for example, advancement of knowledge) is not graphed. R&D is classified according to its primary government objective, although it may support any number of complementary goals. For example, defense R&D with commercial spin-offs is classified as supporting defense, not industrial development.

SOURCES: National Science Foundation, Division of Science Resources Studies, Federal R&D Funding by Budget Function: Fiscal Years 1993-95 (Arlington, VA: NSF, in press); and Organisation for Economic Co-operation and Development, Main Science and Technology Indicators database (1995).

Figure 36. Ratio of R&D scientists and engineers per 10,000 workers in the general labor force, by country



SOURCES: National Science Foundation, Division of Science Resources Studies, Science and Engineering Indicators 1996, NSB 96-21 (Arlington, VA: NSF, 1996); and Organisation for Economic Co-operation and Development.

Figure 37. Scientists and engineers engaged in R&D, by country

(In thousands)

Year	France	Italy	Japan	United Kingdom	United States	Germany
1975	65.3	37.9	253.6	80.5	527.4	103.7
1976	67.0	37.9	263.2	NA	535.2	104.5
1977	68.0	39.7	264.8	NA	560.6	111.0
1978	70.9	40.8	272.8	87.7	586.6	113.9
1979	72.9	46.4	291.2	NA	614.5	116.9
1980	74.9	47.0	303.2	NA	651.1	120.7
1981	85.5	52.1	311.0	127.0	683.2	124.7
1982	90.1	56.7	321.0	128.0	711.8	NA
1983	92.7	63.0	347.4	127.0	751.6	130.8
1984	98.2	62.0	357.4	129.0	NA	NA
1985	102.3	63.8	380.3	131.0	801.9	143.6
1986	105.0	67.8	393.0	134.0	NA	NA
1987	109.4	70.6	415.6	134.0	877.8	165.6
1988	115.2	74.8	434.6	137.0	NA	NA
1989	120.4	76.1	457.5	133.0	924.2	176.4
1990	123.9	77.9	477.9	133.0	NA	NA
1991	129.8	75.2	491.1	131.0	960.4	240.8
1992	137.6	74.4	511.4	135.0	NA	NA
1993	NA	NA	526.5	NA	962.7	NA

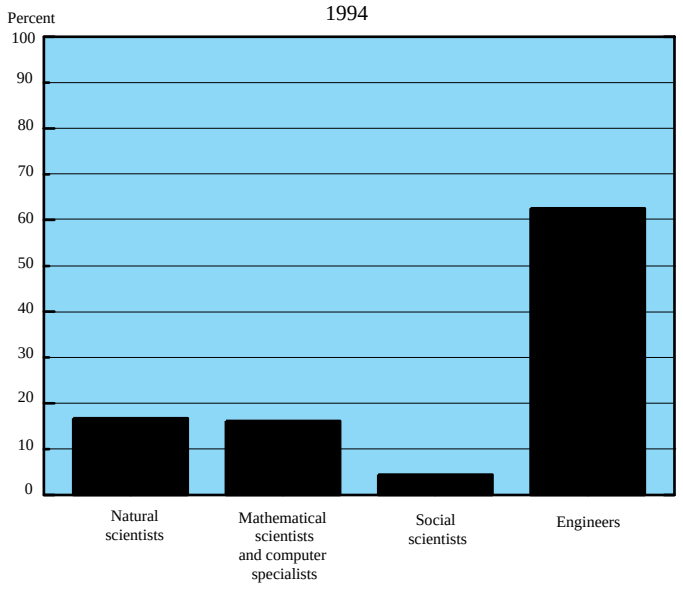
NOTES: Table includes all scientists and engineers (S&Es) engaged in R&D on a full-time equivalent (FTE) basis with the following exceptions: Japanese data include persons primarily employed in R&D in the natural sciences and engineering, and the U.S. data are a mix of S&Es engaged in R&D on an FTE basis and counts of S&Es whose primary work activity is R&D.

As a result of ongoing improvements in methodology and measurement, there are several major breaks in the continuity of the following time series: France (1980-81), Germany (1978-79), United Kingdom (1984-85), and the United States (1984-85).

KEY: NA = Not available.

SOURCES: National Science Foundation, Division of Science Resources Studies; Organisation for Economic Co-operation and Development; and national sources.

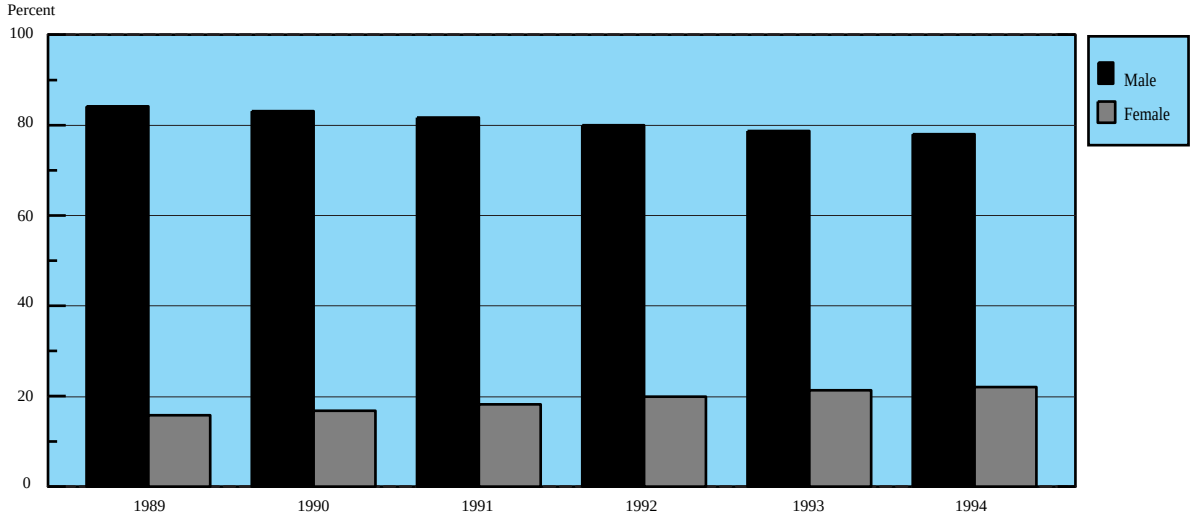
Figure 38. Immigrant scientists and engineers in the United States, by occupation



Field	1992	1993	1994
Total scientists and engineers	22,871	23,534	11,934
Natural scientists	2,796	3,901	1,991
Mathematical scientists and computer specialists	3,402	4,157	1,932
Social scientists	1,088	979	545
Engineers	15,585	14,497	7,468

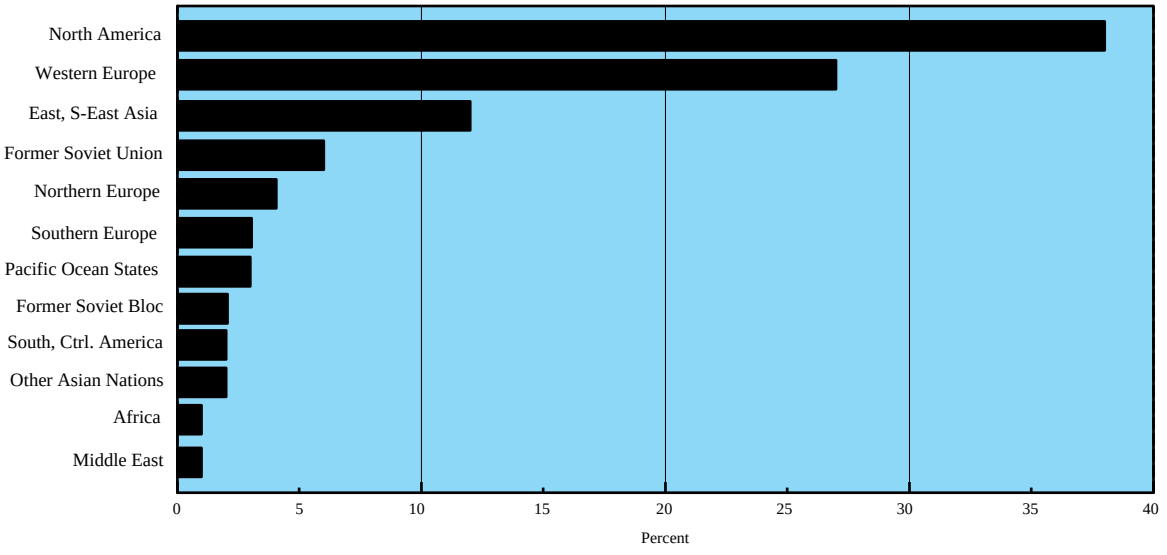
SOURCES: National Science Foundation, Division of Science Resources Studies, using unpublished data provided by the U.S. Department of Justice/Immigration and Naturalization Service.

Figure 39. Scientists and engineers admitted to the United States on permanent visas, by fiscal year of admission and sex: 1989-94



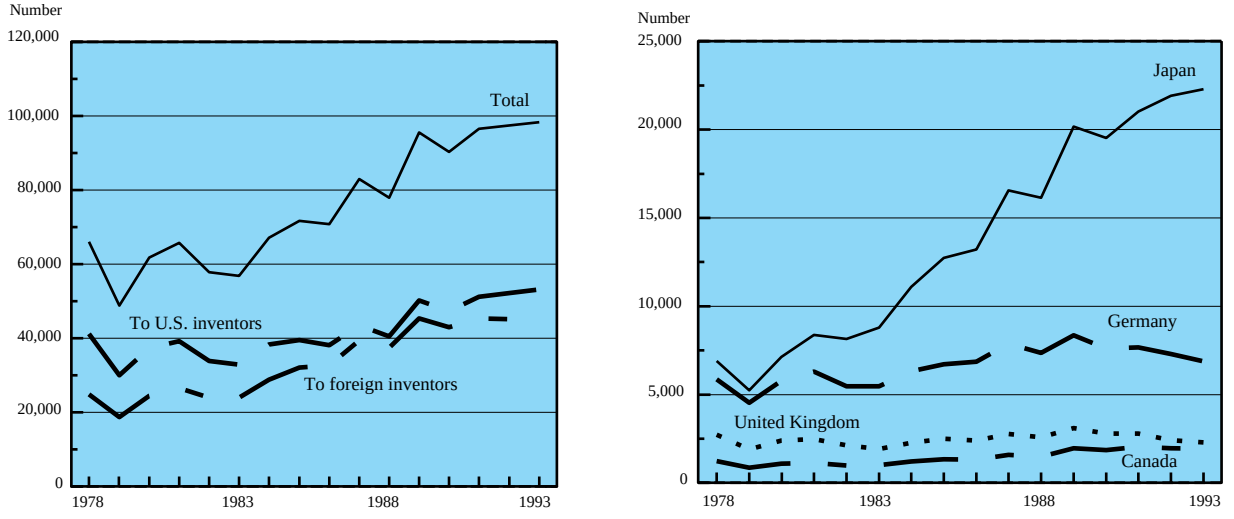
SOURCES: National Science Foundation, Division of Science Resources Studies, using unpublished data provided by the U.S. Department of Justice/Immigration and Naturalization Service.

Figure 40. Distribution of articles in world scientific journals, by region: 1993



SOURCES: Institute for Scientific Information, SCI data base; CHI Research, Inc., Science & Engineering Indicators Literature Database, 1995; and NSF special tabulations.

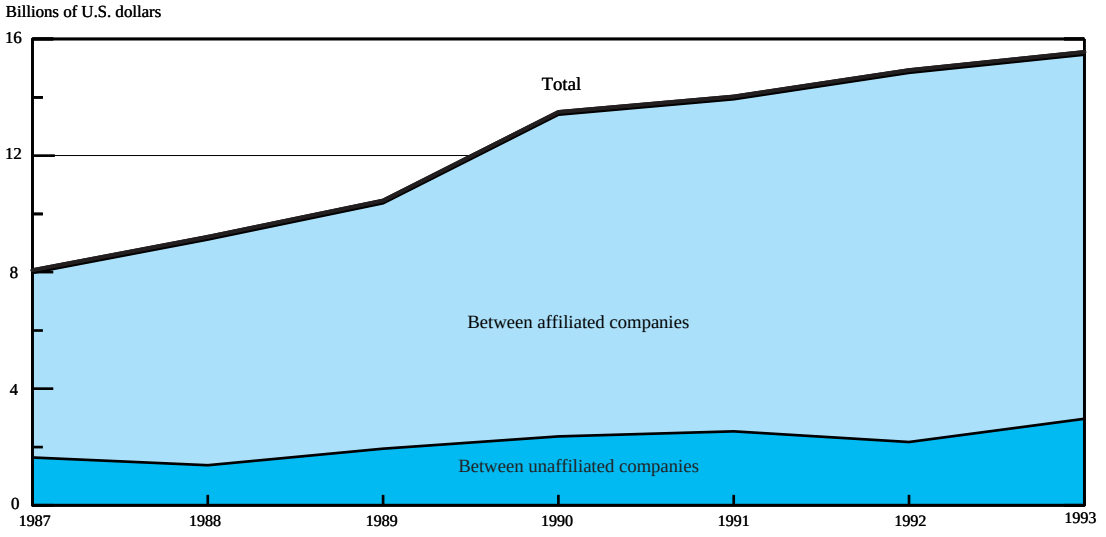
Figure 41. U.S. patents granted, by nationality of inventor



NOTE: German data are for the former West Germany only.

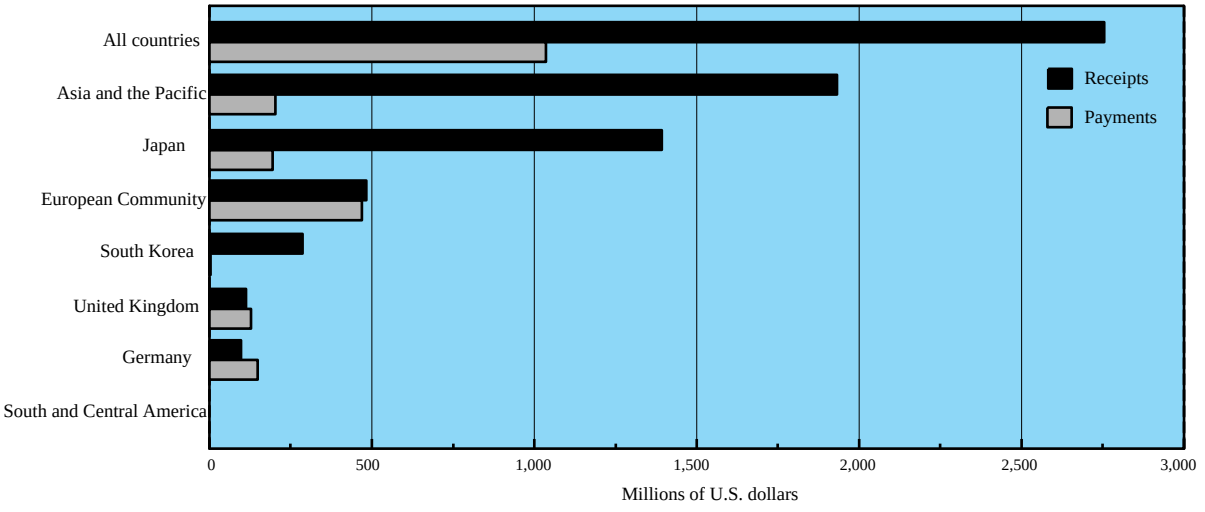
SOURCE: U.S. Patent and Trademark Office, Patenting Trends in the United States, 1963-93 (Washington, DC: Sept. 1994).

Figure 42. Royalties and fees: U.S. trade balance



SOURCE: U.S Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, Vol. 74. No. 9 (Sept. 1994).

Figure 43. U.S. royalties and fees generated from the exchange of industrial processes between unaffiliated companies: 1993



SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, Vol. 72, No. 9 (Sept. 1994), pp. 111-114.